Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
RADWIN LTD.	)	RM-11812
	)	
Amendment of Part 15 of the Commission's Rules	)	
To Advance Improved Broadband Services	)	
In the U-NII-1 and U-NII-3 Bands	)	

REPLY

Russell H. Fox
Jonathan R. Markman
Laura Stefani
Mintz, Levin, Cohn, Ferris,
Glovsky, and Popeo, P.C.
701 Pennsylvania Avenue, N.W.
Suite 900
Washington, D.C. 20004
(202) 434-7387
Counsel for RADWIN LTD.

August 14, 2018

TABLE OF CONTENTS

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
RADWIN LTD.	)	RM-11812
	)	
Amendment of Part 15 of the Commission's Rules	)	
To Advance Improved Broadband Services	)	
In the U-NII-1 and U-NII-3 Bands	)	

REPLY

Pursuant to Section 1.405(b) of the Commission's rules,[1/] RADWIN LTD. ("RADWIN") files this reply to pleadings submitted in response to its above-captioned Petition for Rulemaking (the "Petition") that seeks limited modification of the rules governing the use of the Unlicensed National Information Infrastructure ("U-NII")-1 (5.15-5.25 GHz) and U-NII-3 (5.725-5.85 GHz) bands.[2/] The responses to the Petition overwhelmingly recognize the value of the Commission adopting a Notice of Proposed Rulemaking ("NPRM") to permit the use of effective isotropic radiated power ("EIRP") limits for certain point-to-multipoint devices in the U-NII-1 and U-NII-3 bands that are equivalent to the limits already applicable to point-to-point devices in those bands. An NPRM is the precise vehicle contemplated by the Commission's rules through which parties can address the classes of point-to-multipoint equipment to which the rule changes should apply and any other applicable details.

1/ 47 C.F.R. § 1.405(b).

2/ *See, Consumer & Governmental Affairs Bureau Reference Information Center Petition for Rulemakings Filed*, Public Notice, Report no. 3097 (rel. June 29, 2018); *In the Matter of RADWIN LTD, Amendment of Part 15 of the Commission's Rules to Advance Improved Broadband Services in the U-NII-1 and U-NII-3 Bands*, RM-11812 (filed June 18, 2018) ("Petition").

I. INTRODUCTION AND SUMMARY

The Petition asks the Commission to initiate a proceeding to amend Section 15.407 of the rules to allow devices that emit multiple directional beams, sequentially or simultaneously, in the U-NII-1 and U-NII-3 bands to operate at EIRP levels that are equivalent to those permitted for point-to-point systems in those bands, given the similar nature of those transmissions. The limited proposed rule change would promote greater deployment of current advanced multi-directional beam technology to make more efficient use of an existing spectrum band, allowing more effective operations to provide broadband service to underserved and unserved areas, among others. While allocating spectrum for new uses takes many years,[3/] the proposed rule change would allow the Commission to quickly make better use of *already* allocated spectrum commonly used by many broadband service providers today.

The rule change will help rural broadband providers, who unanimously supported the Petition, to bridge the digital divide – a key Commission goal.[4/] Because the advanced technology involved is broadly available from multiple equipment manufacturers today, broadband providers will have many options by which they will be able to serve more customers, more remotely and with higher capacity, using current infrastructure and site locations. And, as the Appendix to the Petition demonstrated, these proposed changes will cause no harm to existing users in these bands, whether licensed or unlicensed, and will in fact – due to the

---

3/ *See* CTIA, *From Proposal to Deployment: The History of Spectrum Allocation Timelines*, White Paper, Jul. 2015, available at https://api.ctia.org/docs/default-source/default-document-library/072015-spectrum-timelines-white-paper.pdf (noting that, on average, it takes 13 years to reallocate spectrum for wireless use).

4/ *See*, e.g., *Remarks of FCC Chairman Ajit Pai at the Farm Foundation/U.S. Department of Agriculture Summit*, Apr. 18, 2018 ("On my first day as FCC Chairman in January 2017, I said that my number one priority was closing the digital divide and bringing the benefits of the Internet age to all Americans.").

directional and periodic nature of the transmissions – provide greater interference protection for incumbents over the legacy systems they may replace.

Several parties usefully noted the differences between point-to-multipoint devices that use sequential transmissions and those that use simultaneous transmissions. RADWIN agrees that those differences are meaningful – particularly in the absence of limitations on the number and/or cumulative impact of simultaneous beams used – and that different rules may be required for each set of devices. The best way to develop a record that addresses the particular simultaneous transmission devices to which the new rules may apply, and the technical characteristics of those devices, is through adoption of an NPRM. In that context, the Commission can propose rules covering devices with sequential transmissions – on which there is broad agreement – and seek comment on whether, and under what conditions, other point-to-multipoint devices, such as those using simultaneous transmissions, should also be permitted to operate at EIRP limits equivalent to those applicable to point-to-point devices. RADWIN encourages the Commission to issue an NPRM promptly so that the promise of current technology operating on existing spectrum can be realized quickly.

II. DISCUSSION

A. There is Broad Support for Rules That Would Permit Certain Point-To-Multipoint Devices To Use EIRP Limits Equivalent to Point-to-Point Systems

Parties overwhelmingly supported the Commission changing the rules to permit more effective use of the U-NII-1 and U-NII-3 bands. They noted that the U-NII-1 and U-NII-3 bands are already an important way that providers offer Internet access, in particular to homes and businesses in rural areas, and emphasized the potential of advanced point-to-multipoint systems that use multiple narrow beams to improve and expand these offerings, bringing high-speed,

high-quality Internet access to more Americans, a major goal of the Commission.[5/] Facebook noted that U-NII systems, in particular the fixed wireless operations that can benefit most from these advanced point-to-multipoint systems, are a key source of growth in Internet access, and called the Petition a "timely opportunity for the Commission to modernize the Part 15 rules."[6/] Geolinks, a wireless Internet service provider ("WISP"), and Wi-Fi Alliance agreed, noting that U-NII systems are a critical part of closing the digital divide.[7/]

Frontier and Windstream, Internet service providers that offer a mix of wireline and wireless Internet access, noted that these bands have seen significant investment from WISPs, and that the proposed rule changes will dramatically increase their potential, especially in rural areas.[8/] The Wireless Internet Service Providers Association similarly called the U-NII bands the "workhorse" of unlicensed spectrum, in particular fixed wireless broadband, and noted that the proposed rule changes will allow for higher throughput and improved reliability and range, for the same cost.[9/] As RADWIN pointed out, WISPs will realize more benefits – serving more customers – from existing base station locations. CalNet, a WISP, concurred, noting that advanced point-to-multipoint systems would make many currently uneconomical deployments

---

5/ *See Comments of Wi-Fi Alliance*, RM-11812 at 3 (filed Jul. 30, 2018) ("WFA Comments") (noting that these systems will assist in "clos[ing] the digital divide [is] a primary goal of the Commission.")

6/ *Comments of Facebook, Inc.*, RM-11812 at 4 (filed Jul. 30, 2018) ("Facebook Comments").

7/ *See Comments of California Internet, L.P. dba Geolinks*, RM-11812 (filed Jul. 30, 2018) ("Geolinks Comments"); *WFA Comments* at 3.

8/ *See Comments of Frontier Communications Corporation and Windstream Services, LLC*, RM-11812 (filed Jul. 30, 2018).

9/ *See Comments of the Wireless Internet Service Providers Association*, RM-11812 (filed Jul. 30, 2018) ("WISPA Comments").

commercially viable, allowing service to whole new areas of the country.[10/] The North Central Kansas Community Network called the bands crucial to their fixed wireless networks, and noted the potential of the proposed rules to allow those networks to improve and grow.[11/] By enabling them to use existing spectrum resources more intensely, the Commission will also permit WISPs – which generally employ unlicensed spectrum – to compete more effectively against providers using licensed spectrum, to the ultimate benefit of consumers.

Even many of the parties that expressed some concerns with specific details of RADWIN's proposal – generally regarding the impact on lower-power unlicensed radio local area network ("RLAN") systems such as Wi-Fi – and sought additional development of the record, recognized the benefits of the proposed rule changes and supported Commission adoption of an NPRM as the appropriate forum for further discussion and analysis.[12/] As discussed below, these concerns can be addressed through the NPRM process.

B. It is Appropriate for the Commission to Adopt a Notice of Proposed Rulemaking Now

Only three of fifteen commenters urged the Commission *not* to adopt an NPRM, asserting that their concerns preclude Commission consideration of these rule changes in an NPRM.[13/] The Commission should reject this argument. The rules do not require resolution of all

---

10/ *See Letter from Kenneth E. Garnett, Chief Technology Officer, Cal.net, Inc. to Marlene H. Dortch, Secretary, Federal Communications Commission*, RM-11812 (filed Jul. 30, 2018) ("CalNet Comments").

11/ *See Letter from Todd K. Tuttle, Systems Administrator, North Central Kansas Community Network to Marlene H. Dortch, Secretary, Federal Communications Commission*, RM-11812 (filed Jul. 23, 2018).

12/ *See Facebook Comments* at 7-9 and *WFA Comments* at 1.

13/ Globalstar, *Opposition of Globalstar, Inc.*, RM-11812 (filed Jul. 30, 2018) ("Globalstar Comments"); ARRL, *Comments of ARRL, the National Association for Amateur Radio*, RM-11812 (filed Jul. 30, 2018) ("ARRL Comments"); and NPSTC, *Comments of the National Public Safety Telecommunications Council*, RM-11812 (filed Jul. 30, 2018) ("NPSTC Comments").

outstanding issues prior to initiating an NPRM. The Commission's rules require only that a rulemaking Petition provide "sufficient reasons in support of the action requested to justify the institution of a rulemaking proceeding."[14/] Indeed, once that requirement has been met, the rules state that "an appropriate notice of proposed rulemaking will be issued."[15/] NPRMs issued recently contain many open questions on which the Commission seeks comment.[16/] Of course, not every proposal justifies an NPRM; but the overwhelming support for the Petition,[17/] the limited nature of the outstanding issues, and the clear potential public benefit justify prompt adoption of an NPRM in this case.

An NPRM will, if necessary, allow parties and the Commission to further evaluate data on potential interference and to determine the appropriate scope of the rule changes. That is why many of the parties expressing concerns encouraged the Commission to adopt an NPRM. Facebook, for example, noted that "potential technical concerns should not delay the Commission from moving promptly to seek comment on the costs and benefits of RADWIN's proposal."[18/]

While most parties generally recognized the value of changing the rules for point-to-multipoint devices and expressed broad support in particular for modifying rules governing

---

14/ 47 C.F.R. § 1.407.

15/ *Id*.

16/ *See e.g., In the Matter of Amendment of Part 90 of the Commission's Rules*, Sixth Further Notice of Proposed Rulemaking, WP Docket No. 07-100 (2018); *Encouraging the Provision of New Technologies and Services to the Public*, Notice of Proposed Rulemaking, GN Docket No. 18-22, (2018); *In the Matter of Spectrum Horizons*, Notice of Proposed Rulemaking, ET Docket No. 18-21 (2018).

17/ In addition to the support that came from ISPs and companies who promote greater residential and commercial Internet access, U-NII systems are used by public safety entities and utilities for non-critical communications, which means that RADWIN's proposal will help first responders and other important users of U-NII band systems, especially in rural areas.

18/ *Facebook Comments* at 8.

devices that employ sequential beam transmissions, the one limited issue that some parties helpfully noted should be further developed in an NPRM is whether, and particularly under what circumstances, the rules should permit advanced point-to-multipoint systems using simultaneous transmissions to operate at EIRP limits equivalent to those applicable to point-to-point systems.[19/] RADWIN agrees. It may be difficult to distinguish between simultaneous narrow beam transmissions and the use of legacy widebeam point-to-multipoint devices without further guidance. Some manufacturers could take advantage of modified rules to create systems that are effectively legacy point-to-multipoint systems at higher power. RADWIN proposed the use of both simultaneous and sequential transmissions because it sought an administrative parallel between rules for the U-NII-1 and U-NII-3 bands and those already in place for the 2.4 GHz band. Nevertheless, it appreciates that the existence of the wording it proposes in the 2.4 GHz band rules may not be a sufficient basis to extend that wording to the U-NII-1 and U-NII-3 bands.

RADWIN therefore recommends that the Commission *propose* rules permitting sequential transmissions at EIRP levels applicable to point-to-point operations in the U-NII-1 and U-NII-3 bands, which received overwhelming support,[20/] and *seek comment* on how similar rules can apply to point-to-point systems using simultaneous transmissions. These simultaneous transmission technologies are available today and, under the appropriate regulatory structure, can also provide enhanced use of the U-NII-1 and U-NII-3 bands. Point-to-multipoint simultaneous transmissions with EIRPs equivalent to point-to-point systems in the U-NII-1 and U-NII-3 bands

---

19/ *See e.g., NCTA - The Internet & Television Association Comments on Petition for Rulemaking*, RM-11812 at 2 (filed Jul. 30, 2018) ("NCTA Comments"); *ARRL Comments* at 2. Parties note that permitting simultaneous transmissions without other restrictions risks opening the door to systems operating at overall higher aggregate power levels than should be permitted.

20/ *See, e.g., Facebook Comments* at 4; *WISPA Comments*; and *Geolinks Comments*.

can also offer potential to expand service. Appropriate safeguards can be devised to limit the potential EIRP from devices using simultaneous transmissions (effectively, the aggregate of multiple transmitters), and therefore can be restricted based on current rules governing EIRP limits. One possible solution would be to adopt aggregate power limits (for example, 6 or 9 dB above that of a single beam) such that the more beams a system uses at one time, the lower the power limit for each individual beam. This would mean that the closer a system comes to approximating a legacy, omnidirectional point-to-multipoint system, the lower each individual transmission beam's EIRP would be. Limitations on the total aggregate beamwidth of all simultaneous beams could also be applied. In any case, legacy point-to-multipoint systems employing widebeam sector antenna technologies would continue to be limited to their current EIRP levels.

NCTA proposes that the type of advanced point-to-multipoint systems that would be covered by the proposed rules should be limited to rural areas.[21/] The Commission should reject this suggestion. Legacy point-to-multipoint systems as well as point-to-point systems (using EIRP proposed for point-to-multipoint devices in the Petition) are already permitted in urban areas. As RADWIN comprehensively demonstrated, use of point-to-multipoint systems with sequential transmissions will produce no more potential interference in urban areas than legacy point-to-multipoint systems do.[22/] To the contrary, by promoting more directional beamwidth use, the opportunity for interference in crowded urban environments will be reduced. Further, the advantages of these systems should not be denied to Americans living in urban areas, many of whom would benefit from the higher capacity, range and availability of this technology.

21/ *NCTA Comments* at 4.

22/ *See e.g.*, *Petition* at 11.

C. The Two Oppositions to the Petition Are Without Merit

Only two parties – Globalstar and ARRL – raised overall objections to the Petition. ARRL's concerns generally relate to the use of point-to-multipoint devices using simultaneous transmissions. As noted above, the issues related to use of simultaneous point-to-multipoint systems can and should be addressed in an NPRM. Moreover, ARRL's objections are substantively flawed. *First*, contrary to ARRL's claims, the Commission does have ample authority to determine that RADWIN's proposal does not present a meaningful risk of harmful interference to incumbent operations without making a specific finding that there is no risk to amateur operations.[23/] *Second*, the concern that the increased range of advanced point-to-multipoint systems "throws the entire rational for higher power Part 15 operation out the window"[24/] is misplaced. Point-to-point systems using the *same spectrum* are allowed to use the EIRP levels proposed and can produce a risk of interference to which ARRL objects.[25/] *Finally*, ARRL misunderstands RADWIN's reference to the rules governing the 2.4 GHz band. RADWIN is fully aware that the 2.4 GHz band is different from the U-NII bands. As noted above, it patterned its proposed rules after those already in existence as a matter of administrative precedent. And in any case, the Petition included an analysis of the interference cases for the U-NII bands affected by the new rules.[26/]

Arguments by Globalstar and ARRL that the proposal should be rejected because it will produce a rise in the noise floor in the U-NII bands also should be rejected.[27/] Plainly, the

---

23/ *ARRL Comments* at 9-10.

24/ *Id*. at 11.

25/ *Petition* at 3.

26/ *Petition* at Appendix B.

27/ *ARRL Comments* at 8-9; and *Globalstar Comments* at 3.

opportunity to use certain point-to-multipoint systems at EIRP levels equivalent to those permitted for point-to-point systems will increase the noise floor *when transmissions occur and in the direction of that transmission.* But, unlike legacy point-to-multipoint systems, devices using sequential transmissions do not operate constantly in a specific direction and do not transmit in a broad beam pattern. RADWIN's proposal will therefore, as the Appendix to the Petition demonstrated, likely result in a *reduction* in the overall noise floor in the area around the transmitter and more importantly, a *reduced* risk of interference to all nearby co-channel operations. Several commenters agreed, noting that advanced point-to-multipoint systems are *more spectrally efficient* than legacy systems and produce *less* overall emissions.[28/] The proposed advanced point-to-multipoint systems, utilizing multidirectional beams rather than a fixed wideband beam, would operate at the same EIRP as existing point-to-point systems and would transmit only periodically. Indeed, Globalstar admits that it has no evidence that point-to-point operations in the U-NII-1 bands, which these proposed advanced point-to-multipoint systems would mirror, pose any risk to its operations.[29/]

Similarly, Globalstar's efforts to bind the limited relief the Petition seeks to its Petition for Notice of Inquiry are wholly unjustified.[30/] As others have asserted, Globalstar's petition is little more than an untimely request, without any new evidence, to reverse the Commission's fifteen year old decision to allow greater use of the U-NII-1 band. Accordingly, parties overwhelmingly opposed its petition,[31/] and it is unlikely to result in any Commission action.

28/ *Calnet Comments*; *WFA Comments* at 3.

29/ *Globalstar Comments* at 4.

30/ *Id.* at 2-3; *NPSTC Comments* at 5.

31/ *See, e.g.*, *Comments of Cisco Systems*, RM-11808 (filed July 6, 2018); *Reply Comments of CTIA*, RM-11808 (filed July 23, 2018); *Reply Comments of Dynamic Spectrum Alliance and Open Technology Institute at New America*, RM-11808 (filed July 23, 2018); *Reply Comments of Hewlett Packard Enterprise*, RM-11808 (filed July 23, 2018); *NCTA-The Internet & Television Association Replies to*

Conversely, the rule changes proposed in RADWIN's Petition will permit the more effective use of already allocated spectrum by deployment of systems using currently available advanced technologies capable of providing urgently needed, high-quality broadband access to underserved American households and businesses.

III. CONCLUSION

Parties overwhelmingly support the adoption of an NPRM that will permit use of certain point-to-multipoint devices at EIRP levels equivalent to point-to-point systems. That NPRM should propose to allow sequential transmissions by point-to-multipoint devices at point-to-point equivalent EIRP levels, and seek comment on potential rules governing point-to-multipoint devices using simultaneous transmissions. The systems authorized by these new rules will use technology already available in the marketplace to dramatically improve the provision of broadband service in the U-NII-1 and -3 bands, in particular by WISPs, allowing them to provide better service to more Americans, especially those in rural areas.

Respectfully submitted,

/s/ Russell H. Fox

Russell H. Fox
Laura Stefani
Jonathan R. Markman
Mintz, Levin, Cohn, Ferris,
Glovsky, and Popeo, P.C.
701 Pennsylvania Avenue, N.W.
Suite 900
Washington, D.C. 20004
(202) 434-7300
Counsel for RADWIN

August 14, 2018

Comments on Petition for Notice of Inquiry, RM-11808 (filed Jul. 23, 2018); *Reply Comments of Ruckus Networks*, RM-11808 (filed July 23, 2018); *Reply Comments of Qualcomm, Inc.*, RM-11808 (filed July 23, 2018); *Comments of Wi-Fi Alliance*, RM-11808 (filed July 23, 2018); and *Comments of WISPA*, RM-11808 (filed July 6, 2018).

CERTIFICATE OF SERVICE

I, Jonathan Markman, hereby certify that on August 14, 2018, copies of the foregoing Reply were sent to the following:

Christopher D. Imlay
ARRL, The National Association for Amateur Radio
General Counsel
Booth, Freret & Imlay, LLC
14356 Cape May Road
Silver Spring, MD 20904-6011
(301) 384-5525

Leonard A. Steinberg
Senior Vice President & General Counsel
ALASKA COMMUNICATIONS SYSTEMS GROUP, INC.
600 Telephone Avenue
Anchorage, Alaska 99503

Donnie McCorkle
ATC Communications
524 Nebraska Ave
Arapahoe, NE 68922

Richard R. Cameron
CAMERON LAW & POLICY LLC
2550 M Street, N.W., Suite 343
Washington, D.C. 20037
Counsel for Alaska Communications

Kenneth E. Garnett
Chief Technology Officer
Cal.net, Inc.
4101 Wild Chaparral Drive
Shingle Springs, CA 95682

Alan Norman
FACEBOOK, INC.
1 Hacker Way
Menlo Park, CA 94025

AJ Burton
FRONTIER COMMUNICATIONS
1800 M Street, NW, Suite 850S
Washington, DC 20036

Skyler Ditchfield
Chief Executive Officer
Geolinks, LLC
251 Camarillo Ranch Road
Camarillo, CA 93012

Regina M. Keeney
Stephen J. Berman
Lawler, Metzger, Keeney & Logan, LLC
1717 K Street NW, Suite 1075
Washington, DC 20006
Counsel for Globalstar, Inc.
(202) 777-7700

L. Barbee Ponder IV
General Counsel & Vice President
Globalstar, Inc.
Regulatory Affairs
300 Holiday Square Blvd
Covington, LA 70433

Rick Chessen
Danielle J. Piñeres
NCTA – The Internet & Television Association
25 Massachusetts Avenue, NW – Suite 100
Washington, DC 20001-1431
(202) 222-2445

Ralph A. Haller
National Public Safety Telecommunications Council
8191 Southpark Lane, Suite 205
Littleton, Colorado 80120-4641
Chairman
866-807-4755

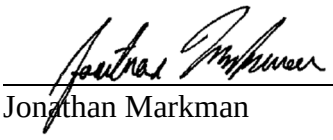
Todd K. Tuttle
Systems Administrator
North Central Kansas Community Network
109 N. Mill
PO Box 565
Beloit, KS 67420

Fred Facemire
Director of Engineering
Pocketinet Communications, Inc.
45 Terminal Loop, Suite 210
Walla Walla, WA 99362

Thomas Whitehead
WINDSTREAM SERVICES, LLC
1101 17th Street, NW, Suite 802
Washington, DC 20036

Alex Roytblat
10900-B Stonelake Blvd.
Suite 126
Austin, TX 78759
Senior Director of Regulatory Affairs
Wi-Fi Alliance
(512) 498-9434

Stephen E. Coran
Lerman Senter PLLC
2001 L Street, NW, Suite 400
Washington, DC 20036
(202) 416-6744
Counsel to the Wireless Internet Service Providers Association



Jonathan Markman